SF 2.1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, Washington 98101

March 1, 1996

In Reply
Refer To: ECL-111

Mr. Robert L. Geddes
Senior Environmental Engineer
Monsanto Chemical Company
P.O. Box 816
Soda Springs, ID 83276

Subject: Monsanto's Phase III Feasibility Study

Dear Mr. Geddes:

This letter provides the U.S. Environmental Protection Agency's (EPA) comments on Monsanto's December, 1995, Phase III Feasibility Study (FS) and the associated response to EPA's earlier comments on the Phase II FS. EPA has not provided written comments sooner because we understood from our December FS meeting that Monsanto was going to follow up "soon" with: 1) a letter explaining the rationale for Monsanto's proposed target cleanup level of 5×10^{-4} for soils; and, 2) a probabilistic risk assessment, which EPA has been asked to consider in making remedial decisions. Those documents have not yet been provided. Therefore, EPA is providing the enclosed comments now in an effort to resume progress toward completion of the FS, public comment period and selection of remedy. The aforementioned documents may still be useful if provided soon, but EPA is unwilling to suspend activity indefinitely awaiting them.

The FS was largely responsive to Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance, the National Contingency Plan (NCP), the Administrative Order on Consent (AOC) between EPA and Monsanto, and earlier site-specific comments provided by EPA. It generally does a succinct job of providing the information necessary to evaluate the various alternatives and identify a preferred alternative. However, EPA is not in complete agreement with some of the text and conclusions and has some comments and questions which Monsanto must address before the document can be approved.

While some of the issues of concern are significant, EPA believes that our differences are not large. Fairly minor adjustments to the text could make the FS adequate for sharing with a wider audience and making remedial decisions. The

following are some of EPA's main concerns in the enclosed comments:

- the FS inaccurately concludes that Alternatives 1 and 2, No Action and No Action with Groundwater Monitoring, meet the CERCLA criteria for protectiveness and should be retained as potential remedial options. EPA concludes that they do not meet the protectiveness threshold and should not be retained because they would allow for unrestricted exposure to contaminated groundwater and soils around the facility;

- the FS evaluation and application of the UMTRCA soil cleanup standard is inconsistent with EPA's interpretation of the data and application of the standard at other sites. As a result, the FS inaccurately concludes that no soils would warrant cleanup based on UMTRCA. Note also that the UMTRCA standard has typically been used as an ARAR for cleanup of industrial property, not for unrestricted or residential property;

- EPA does not concur that Alternative 8 and "TCL-6" would be "over-protective". They could accurately be described as the "most protective" alternatives;

- the statement that the "5 x 10^{-4} risk level represents an aggressive cleanup goal." is unsupported and appears inconsistent with the NCP. Also, the simple statements that this goal would be "adequately protective of human health and the environment" and has "been implemented at other sites" are insufficient, based on CERCLA guidance, to justify that TCL. Such a departure would require a much more compelling site-specific justification than has been presented to date. The comments note that EPA has identified and is evaluating a potential rationale for selection of a 3 x 10^{-4} cleanup level for radionuclides in soils at this site;

- EPA accepts the general conclusion that past practices and emissions pre-dating the current, more efficient emission controls appear to have been a much more significant source of the contaminants in soils surrounding the facility than fugitives from on-site source piles under current practices. However, the estimated time frames for recontamination of surrounding soils in the FS are so implausible that they have led to questions about the more general conclusions.

Those are some of the most important issues from the enclosed comments. In accordance with the AOC, the complete set of comments must be addressed in writing by letter and by

revisions to the FS where appropriate. Monsanto's response letter with revised pages for substitution in the FS (or a revised FS if necessary) is due to EPA on or before Friday, March 29, 1996. If requested by Monsanto in a timely response letter, EPA will approve up to 2 additional weeks for submission of the actual revised FS pages/documents.

If you have any questions about this letter please call me at (206) 553-2100. I also suggest we hold a conference call to discuss these comments prior to the deadline for a written response from Monsanto. As I will be out of the office from March 11 through March 22, 1996, I suggest we have such a conference call sometime on March 6, 7 or 8, or early in the week beginning March 25th. Please call me by March 11th and let me know if, and if so when, you would like to hold such a call.

Sincerely,

Timothy H. Brincefield
Superfund Site Manager

Enclosure

cc: Kent Lott, Monsanto Soda Springs
Gordon Brown, IDHW
Mike Thomas, IDHW
Charles Ordine, EPA Associate Regional Counsel
Dean Pahl, Montgomery Watson, Inc.

Review Comments
Phase III Feasibility Study
Monsanto Chemical Company
December 1995

SPECIFIC COMMENTS

1. Page 1-28, Section 1.4.3, Paragraph 2: The additional sampling of sediment and macroinvertebrates was not done "Because of an absence of sensitive aquatic species..." The additional sampling was required because the preliminary sampling suggested the potential for effects to surface water and sediment dwelling organisms.

2. Page 1, Paragraph 3: The statement "..., it was determined there is no adverse health risk from exposure to sediment and surface water", is too strong based on the RI/FS. It should read, "no adverse health effects were predicted for exposure to sediment and surface water." This paragraph should also state that elevated levels of constituents of interest were found in the sediments of Soda Creek.

3. Page 2, Paragraph 1: Use of the terminology "science-based" here and later in the text implies science was not part of the EPA ERA. This term should be deleted from the text.

4. Page 1-20, Section 1.4.1: It would be very useful to have a schematic here showing all the source and waste streams.

5. Page 1-28, Section 1.4.3, Paragraph 3: The statement that "..., there is no evidence of toxicity in Soda Creek sediments.", should be modified to include the statement that no toxicity was evident in the chironimid toxicity test utilized during the triad approach. This is important because only one toxicity test was used. This one toxicity test does not confirm that there is absolutely no toxicity within the creek due to contaminants in sediment.

6. Page 1-29, Section 1.4.4, Paragraph 3: This is the only place where molybdenum is mentioned as a groundwater contaminant. The reasons for its elimination from future discussions should be made more clear.

7. Page 2-2, Section 2.1, Paragraph 2: The term "chemical-specific" should be inserted ahead of "ARARs".

8. Page 2-3, Section 2.1.2, Paragraph 3: This text implies that radiation is due to naturally occurring materials which are **not** site related contaminants. The last sentence must be changed by inserting "human/industrial use of".

9. Page 2-3, Section 2.1.2, Paragraph 4 (also page 2-11, paragraph 2; page 4-2, Section 4.1, paragraph 3 etc.): The comparison of radium-226 concentrations to and other evaluations and application of the UMTRCA soil cleanup standard in the FS is not consistent with EPA's interpretation of the data and application of UMTRCA. As a result, the FS inaccurately concludes that no soils would warrant cleanup based on UMTRCA. EPA's interpretation of site data and the standard concludes that areas represented by samples including concentrations in excess of 8.3 pCi/g (see figure 1-8, samples S2-3, S2-4, and S2-5) would likely require cleanup under EPA's application of UMTRCA at other sites. Therefore, the text should be changed to state that no action for soils, without institutional controls, would **not** meet this ARAR and should not be rated "protective" even under this TCL.

   Also, as was discussed in the context of the RAO memorandum, UMTRCA is not viewed as a risk-based ARAR and is typically applied to industrial sites, so risk-based cleanup goals may be more appropriate for the surrounding soils, which are available for unrestricted or potential residential use.

10. Pages 2-4 and 2-5, Section 2.2. EPA agrees with the RI/FS conclusions that on-site sources are better controlled now than in the past and that current practices apparently contribute much less to off-site soils than past practices, but does not agree with the attempt at quantification in the FS. Monsanto's analysis asserts that it would take 250,000,000 to 350,000,000 years for the facility to generate the radium-226 concentrations that have been detected in soils surrounding the facility. For the purposes of this discussion, the SENES deposition modeling is assumed to be technically correct; however, if it is assumed that the depositional processes modelled by SENES are the major sources of radium-226 in soil, then historical emissions from the facility must have been several million times worse in the past. This scenario appears implausible and appears to fail to account for the principal mechanism(s) by which surrounding soils are impacted by on-site activities. Consequently, it *can not* be concluded that present activities will not result in continuing releases to surrounding soils. The quantitative approach should be deleted and the text should be changed accordingly throughout the FS.

11. Page 2-6, Section 2.3, Paragraph 1: The Baseline Risk Assessment did not "assume" concentrations. Actual values were utilized. The text must be changed accordingly.

12. GRAs, Page 3-1, Section 3.0, Paragraph 2: The language in the sentence about air, surface water and sediments must be

revised to "do not pose an **unacceptable** adverse health risk".

13. Page 3-15, last bullet and Section 3.2.3.1: This language suggests Monsanto is currently remediating groundwater by pumping it and discharging it to surface water without controls, an issue we have raised previously. EPA suggests that the text be changed by adding the words "plus natural attenuation" after "plant operations" and "beneath the plant" to the end of the sentence. Monsanto should anticipate that monitoring of the outfall for all groundwater potential contaminants of concern will likely be required as part of the selected remedy. If required, one goal would be to establish monitoring requirements that are functionally equivalent to NPDES permit requirements and to defer oversight to the NPDES program if/when possible.

14. Page 3-16, Section 3.2.3.4: The use of the word "treatment" in the first sentence is unclear. If, however, it refers to evaporation it must be eliminated, because evaporation as used in this case is not considered treatment under CERCLA.

15. Page 3-26, Section 3.3.3.2: Given predictions that groundwater will recover in a finite period of time (5-30 years), it seems reasonable that restrictions on groundwater use, if selected, may be temporary (as selected at Kerr-McGee) rather than permanent as described in the text. A reference to temporary restrictions should be added.

16. Page 4-2, Section 4.1, Paragraph 3, et. al: The discussion limiting recycling as an option based solely on cost must be revised. Options may not be eliminated at this stage of the FS solely on cost.

17. Page 4-7, Section 4.2.1, and Page 4-9, Section 4.3.1: The statement that there is no "foreseeable" groundwater extraction is unsupported. The second sentence in these sections (and all other instances) must be revised by deleting "or foreseeable" and by replacing "does meet" with "currently meets". The fourth sentence in Section 4.3.1 (and similar statements) must be revised by inserting "over time (5-30 years)" after the word "met". Also, EPA does not agree with the conclusion and statements that Alternatives 1 and 2 meet the RAOs for groundwater. Instead, the text should use the language from Table 5-4 that says this "will be protective after concentrations decrease to acceptable levels" and include the estimated time frame (5-30 years).

18. Page 4-8, Section 4.3, Paragraph 2: EPA anticipates that 5-year reviews will also include review of: a) the facility's regulatory compliance status, and, b) whether groundwater is being used as a drinking water source.

19. Page 4-9, Section 4.3.3 (and related cost estimates): The basis for assuming 10 years of groundwater monitoring is not clear, given that elsewhere in the RI/FS it says that contaminants of concern in groundwater will likely exceed MCLs for as long as 30 years. The FS estimates are likely sufficient for decision-making and do not need to be changed. However, Monsanto should note that these estimates are not limits and that EPA cannot commit in advance to the duration of monitoring or the number of 5-year reviews that will be needed, if such reviews are deemed necessary.

20. Page 4-13, Section 4.4.2 (also Sections 4.5.2, 4.6.2, 4.7.2, 4.8.2 and 4.9.2): Most dust control activities are listed as moderate to implement in Table 3-8; why is it referred to here as easy? Similarly, land use/access restrictions are described as difficult to implement here and moderate to implement in the tables, but later (page 5-30) the text states that "obtaining the cooperation of off-site property owners would not be difficult". Please explain the distinctions behind these differing evaluations and/or how the text should be modified. Note that EPA's experience in Idaho has been that institutional controls which are self-imposed by property owners are easy to implement and rate moderately high for long-term effectiveness and permanence, while controls on third parties can be very difficult to implement and may not be as effective or permanent.

21. Page 4-17, Section 4.6.2: Explain briefly why a pilot study would be difficult to implement and what, if any, additional information has been generated about this alternative since the FS was submitted. Based on the information in the FS, this potentially looks to be the most promising active cleanup alternative for soils.

22. Page 4-24, Section 4.10.3: Why do recycling costs vary by a factor of 3 across the alternatives? Also, the listing of alternatives is incomplete (e.g., 3b and 4b are missing), and, isn't alternative 3d less expensive than 4d?

23. Page 5-6: Reduction in Toxicity, Mobility, and Volume: Consistent with earlier comments, the fifth sentence should be changed to "As discussed in Section 3.0, on-site sources do not appear to represent significant sources" and the next sentence by inserting "appear to have" after "off-site soils".

24. Page 5-8, Section 5.4 (see also 4-8): The description of five-year reviews is not consistent with CERCLA Section 121[c], which mandates that EPA (or the designated lead agency) review the remedial action taken at certain sites "no less often than every five years after initiation of

such action to assure that human health and the environment are being protected by the remedial action being implemented." This "five-year review" requirement is separate from and unaffected by the deletion process; that is, sites requiring five-year review must have that review regardless of whether they are still on the NPL. The NCP language regarding five-year reviews (page 8851) says that "If a remedial action is selected that results in hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and uncontrolled exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action." The purpose of five-year reviews given in the FS is inconsistent with this and must be revised based on the NCP. Also, the next sentence in this paragraph, which begins "In the five year review..." must be modified by deleting the reference to Monsanto. Monsanto will provide information for the review(s) but EPA and/or the State will perform the review(s), if any are required.

25. Page 5-10, Section 5.4.1, last paragraph: Insert "(5-30 years)" after "over time".

26. Page 5-10, Section 5.4.1 and Table 5-4: The statement that "Alternative 1 is protective of human health after the concentrations decrease to acceptable levels" is accurate but not the complete picture. This situation is protective under **current** conditions, since there is no exposure. However, the text on 5-10 and Table 5-4 should be modified by adding the sentence "This alternative is protective under current conditions so long as no one is drinking contaminated groundwater, but no controls are included to assure that this situation continues". In addition to this change in the text/Tables, EPA concludes that the appropriate rating for Alternative 1 is "No" for protectiveness, and that the sentence that begins "Thus, Alternative 1..." must be deleted from the text.

27. Page 5-11, Table 5-4 (and all others): The evaluation of "Compliance with ARARs" in the text and tables must be clarified by adding an estimate of years (i.e., 5-30 years).

28. Page 5-11, Table 5-4 and Page 5-13, Table 5-5: Failure to meet threshold criteria makes all additional evaluation unnecessary. If the additional evaluation is included, why is the same short term effectiveness rating as alternative 1 not used here? Both include no action.

29. Page 5-12, Section 5.4.2, Paragraph 2: Consistent with other comments, complete the second sentence in this paragraph by adding "since there are no current controls to prevent use of groundwater in affected areas or residential

exposure to affected soils".

30. Page 5-15, Table 5-6, Threshold: In the assessment of the threshold criteria for on-site sources, "engineering controls" should be inserted immediately after "health and safety measures". This also applies to subsequent alternatives.

31. Page 5-15, Table 5-6, Reduction in MTV, Last Sentence: The reference to on-site source materials should be changed to say they "do not appear to be significant".

32. Section 5.4, Table 5-4 through 5-8: Under short term effectiveness, indicate the time until Remedial Action Objectives are achieved for each media of concern.

33. Page 5-23, Section 5.5.1.2: As noted in the last sentence in this section, Alternatives 1 and 2 are not protective since neither met the threshold criteria. The text must be revised by deleting the word "possible" in the first sentence and the entire last sentence in paragraph 2 ("From...").

34. Page 5-24, section 5.5.1.3: The first sentence must be modified to read "all alternatives except 1 and 2 are considered to provide adequate protection of human health and the environment with respect to groundwater over time (5-30 years) and assuming existing groundwater and land use continues, since...".

35. Page 6-2, section 6.1.1, also Page 6-8, Section 6.2: There is no support in the text for the statement that cleanup to the TCL-6 level (defined as 1×10^{-6} or background, where background is higher) would be over-protective. EPA does not concur. The text (throughout) must be changed to refer to this as the most protective option. Monsanto's second conclusion about costs is supported and can remain, although because of the preference for permanent remedies under CERCLA and since cost-effectiveness is in part a subjective value judgement, others may reach different conclusions.

36. Page 6-4, Section 6.1.2: The statement that the "5×10^{-4} risk level represents an aggressive cleanup goal" is unsupported and appears inconsistent with the NCP. Also, the simple statements that this goal would be "adequately protective of human health and the environment" and has "been implemented at other sites" are not sufficient to justify that TCL, based on CERCLA guidance. Such a departure would require a much more compelling site-specific justification than has been presented to date.

Note that for radionuclides at this site, EPA is evaluating a potential rationale for selecting a TCL of $\underline{3 \times 10^{-4}}$. The reasons for doing so would include recent decisions at other sites with radionuclide contamination in potential residential soils (including Teledyne Wah Chang Albany), the residential cleanup goals in the draft Part 196 regulations for federal facility cleanups, and some of the uncertainties associated with the risk calculations for soils surrounding this facility, such as the difficulty distinguishing site-related contaminants from natural background in this area.

37. Page 6-6, Section 6.1.3 & Section 6.2: EPA does not concur that the UMTRCA soil cleanup standards are "arguably the most reasonable.. " or that, if the standard were applied appropriately, this level would be met for industrial property surrounding the facility or fully protective for unrestricted use, given the available site specific risk assessment data and CERCLA requirements.

38. Page 6-8, Section 6.2: Continued discussion of alternative 2 is inappropriate since it failed to meet threshold criteria. It must be eliminated from consideration along with Alternative 1.

39. Page 6-8 and 6-9, Section 6.2: Based on the FS, it appears stronger consideration should be given to Alternative 5d. The primary difference between this alternative and 4d is the implementation of in-situ biotreatment for affected soils. While the projected cost is greater for 5d, it offers the possibility of cleanup in a finite period of time, thus it could avoid the need for long-term institutional controls. As part of Alternative 5d, a pilot study could be performed and results obtained to determine if this alternative is feasible. If the pilot study results are not promising, then alternative 5d could be discarded and Alternative 4d would be more favorable in comparison.

40. Pages 6-8 and 6-9. Section 6.2: Since EPA does not concur that alternative 8 is "over-protective", EPA does not agree that alternative 8 should be eliminated from consideration, particularly for areas where institutional controls are not in place. Given the inappropriateness of the UMTRCA standard and the lack of justification for a 5×10^{-4} cleanup level, the remaining alternatives that appear protective are 4 a-d, 5 a-d, and 8 a-d. While the a, b, and c alternatives are arguably the most protective, since the d alternatives are also protective, cost less, and have less short-term impacts, they may be appropriate to focus on for the preferred alternative. Given the preference for treatment and permanent remedies under CERCLA, and the desirability of avoiding long term operation and maintenance

of the remedy, alternatives 5 and 8 could be favored. However, since institutional controls would be protective (where they can be implemented) and cost much less, alternative 4d (TCL = $1x\ 10^{-4}$, possibly modified by using 3×10^{-4} for radionuclides) seems the most favorable alternative to recommend. For areas where ICs are not in place or feasible, alternatives 5 or 8 appear to be the best fallbacks. We should discuss this issue on a conference call and appropriate changes should be made in the text.

41. Appendix A-2: The calculations presented in Appendix A-2 are difficult to follow because it appears several errors are present in the equations. For example, the term "m^3" should be "m^2" in the first bulleted equation. The term "Mr" should be "Mc" in the third bulleted equation.

42. Table B-5 is missing 'present worth' calculation page.

43. Table B-23 and B-29, the cost for recycling UFS is different in the two tables ($0.5/ton and $1/ton). Which is correct?

44. Page D-10, First Bullet: The word "chironimid" should be added before "toxicity tests".

45. Page D-11, Last Paragraph: Before the Conclusions Section, Second Sentence: Add "based upon chironimid toxicity bioassays" to the sentence.

46. Page D-11 and D-12, Conclusions: A statement must be added that significantly increased concentrations of some contaminants were found in the sediments of Soda Creek, downstream from the Monsanto NPDES outfall.

GENERAL COMMENTS

47. The conclusions in the Executive Summary must be changed in accordance with the above comments and the corresponding changes to the text.

48. There is virtually no discussion of radon and/or radon in future off-site buildings in the RI/FS. Is additional information on radon at the site available?

49. While the FS does not address potential movement of a slug of groundwater from below the site, proper monitoring should be adequate to address this issue.

50. The lack of toxicity of contaminants in the sediments of Soda Creek is highlighted in several places in the FS. In each case this lack of toxicity is overplayed, given that Monsanto tested only one species. The statements should be

qualified with regard to the species tested and the methods employed.

51. Page 4-12, Section 4.4.1, Page 4-18, Section 4.7.1: The sections evaluating effectiveness did not consistently to evaluate whether each alternative a) provides long term effectiveness and permanence, b) reduces the mobility, volume, or toxicity through treatment and c) provides short-term effectiveness, however sufficient information seems to have been provided to support the conclusions reached.

Responses to Phase II FS Comment Responses

Most of Monsanto's comment responses and corresponding text changes were adequate to address the EPA comments. EPA does not fully concur with Monsanto's responses to comments 7, 8, 9, 11, and 18, although the responses and changes made were sufficient to allow for review of the Phase III FS. The following identifies our differences on those responses:

7) EPA's view of OSHA requirements and CERCLA responsibilities are spelled out fully in the October 2, 1995 comment letter and earlier letters regarding the RAO memorandum. EPA's CERCLA responsibilities overlap with OSHA requirements at CERCLA sites that are operating facilities. As discussed in the RAO memorandum, no RAOs for protection of workers are necessary under current conditions.

8&9) As was discussed above, EPA does not fully agree with the attempt at quantification of emission/deposition rates in the FS. However, the application of dust suppressants seems to be the appropriate remedial action to take. Future monitoring requirements will be determined in the Record of Decision.

11) EPA does fully concur with Monsanto's evaluation of the lack of ecological risks or characterization of the Ecological Risk Assessment. However, sufficient information is provided to support remedial decision-making.

18) EPA does not fully concur with Monsanto's interpretation of OSWER Guidance. EPA's interpretation has been fully detailed in our earlier correspondence. The revised FS is addresses this issue adequately for the purposes of remedial decisions at this site.